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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.    | CONFIRMATION NO. |
|--|-------------|----------------------|------------------------|------------------|
| 10/821,734   | 04/08/2004  | Israel Stol          | 01-0012 [370024-00010] | 1526             |
| 8840   | 7590        | 12/23/2005           | EXAMINER               |                  |
| ECKERT SEAMANS CHERIN & MELLOTT, LLC<br>ALCOA TECHNICAL CENTER<br>100 TECHNICAL DRIVE<br>ALCOA CENTER, PA 15069-0001 |             |                      | TRAN, LEN              |                  |
|  |             |                      | ART UNIT               | PAPER NUMBER     |
|  |             |                      | 1725                   |                  |

DATE MAILED: 12/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/821,734

Applicant(s)

STOL ET AL.

Examiner

Len Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-17 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-6, 8, 10-14, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mombo-Caristan (US 5,595,670), and further in view of JP 60-148670.

Mombo-caristan (US '670) discloses a method of welding using a laser beam to weld a pair of sheets using a focused beam which maximizes welding speed while minimizing welding

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defects. The power is such that keyhole welding is achieved. During welding the beam is focused into an oblong spot and trained on at least one sheet in order to weld them in the longitudinal axis of the beam spot; preferably oriented tangent to the weld line or parallel to the weld direction. Prior to welding, the sheets are oriented and positioned in close proximity to each other for form a weld joint, such as a lap joint, butt-joint, T-joint or another type of weld joint. Sheets of different thicknesses, relatively thin cross sectional thickness and tiller metal gaps can all be welded. Different sheets materials may be welded, such as aluminum. Sheet material to be welded using the high speed high power method have a thickness of at least 0.5 mm (approx. 0.2 inches). Additionally, if the joint fit-up gap is too great, filler metal can be used.

Preferably, the beam is moved along the weld line at a welding speed of at least one meter per minute and preferably at least two meter per minute (approx. 40 to 80 inches per minute).

Figure 1 shows the focused beam spot oscillating as it travels along the weld line. Figure 12C depicts a side to side pattern along the weld line as the beam travels along the weld interface region of the sheets. The beam spot can be oscillated back and forth along the axis of the beam spot, such that larger joint fit-up gaps can be accommodated. Figures 12 D & E illustrate a circular motion of the beam. (abstract, figures 1 1-12, col. 3, lines 26-67, col. 4, lines 12-15, 31-37, 49-52, col. 5, lines 6-67, col. 6, lines 1-15, 58-60, col. 7, lines 1-2, 8-13, 45-50, col. 8, lines 20, 36-42, 67, col. 9, lines 16-19, col. 1, line 52, col. 14, lines 32-45, 63-67, col. 15, lines 58-61, col. 18, lines 51-53).

Mombo-caristan (670) teaches lap welding but not specitically lap-penetration or lap-fillet. However, penetration and fillet lap welds are subsets of a lap weld and consequently,

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Mombo-caristan (û670) does anticipate these types of lap welds. Mombo-caristan (ç670) teaches a welding speed of about 40 inches or preferably 80 inches per minute or more. The prior art invention is directed to maximizing welding speed while minimizing defects. Thus, the reference anticipates instant claims welding speed, because these greater welding speeds are a desired outcome of the invention. The attainment of greater welding speeds would have been sought after through process optimization which is a known process and involves only routine skill in the art. See *In re Boesch*, 205, USPQ 215. Mombo-caristan (ç670) teaches weld sheet materials which are at least 0.2 inches thick. Instant claim states a thickness of over 0.1 inches. Clearly, at least 0.2 inches anticipates instant claim.

Mombo-Caristan fails to teach discharging molten metal by arc welding. However, JP '670 discloses arc welding with laser beam in order to maintain a normal keyhole at an exceptionally high welding speed and to obtain a stable penetration (abstract). Therefore, it would have been obvious to combine JP '670's arc welding and laser beam method with Mombo-Caristan, in order to maintain a normal keyhole at an exceptionally high welding speed and to obtain a stable penetration.

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4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mombo- Caristan (US '670) and JP '670, and further in view of Okada (US 6,410,882).

Mombo-caristan (US' 670) does not teach a frequency value, although frequency is disclosed.

Okada teaches a laser welding method in which the laser beam is vibrated in a direction

perpendicular to the optical axis. Keyhole welding is achieved. The vibration is conducted tmder a frequency of 200 Hz with a feed speed of 1 meter per minute (about 80 inches per minute).

(abstract, col. 2, lines 5-67 & col. 3, lines 1-2, col. 4, lines 30-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a frequency of 200 Hz or there about, as taught by Okada in the Mombo-caristan (US' 670) and JP '670's process because these are both directed towards suppressing welding defects regardless of the feed speed.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mombo-caristan (US '670) and JP '670 and further in view of Mombo-Caristan (US 5,603,853).

Mombo-caristan (US '670) suggests sheet weld gaps but does not state specific dimensions.

Mombo-caristan (US' 853) teaches a method of welding sheet material. In one embodiment the gap created between the sheets is no greater 0.10 mm or less than 10% of the sheet thickness. If the gap is larger than 0.1 mm it is recommended that a filler metal is used. It would have been obvious to one of ordinary skill in the art at the time of the invention to define a

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gap dimension, as taught by Mombo-caristan ('853) in the Mombo-caristan (US '670) process because it helps further characterize the process.

Mombo-caristan (:853) does not teach the exact dimensions of instant claim. However, it is well settled that where patentability is predicated upon a change in a condition of prior art process, such as defining gap width, the change must be at least "critical", that is, it must lead to a new and unexpected result. The applicant has the burden of providing such proof of criticality. Note *In re Aller* et al. 105 USPQ 223.

#### *Allowable Subject Matter*

6. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior arts of record does not teach a round laser.

#### *Inquiry*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (571) 272-1184. The examiner can normally be reached on M-F, 8:30 - 5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Len Tran  
Primary Examiner  
Art Unit 1725



December 18, 2005